Listing of All Claims

1. (Currently amended) A complex multiplier for adjusting phase and/or gain imbalances in a digital signal comprising:

a first set of multiplication units to multiply an in-phase ("I") component of said signal by a first set of coefficients; and

a second set of multiplication units to multiply a quadrature ("Q") component of said signal by a second set of coefficients,

wherein each of said coefficients in said first set and said second set are independently modifiable ~~relative~~

and further comprising at least two adders, each adder arranged to sum an output of the first set of multiplication units together with an output of the second set of multiplication units produce an output result that is a linear function of both the I and Q components.

2. (Canceled).

3. (Original) The complex multiplier as in claim 1 further comprising:

phase compensation logic to detect a phase imbalance in said signal and to modify one or more of said coefficients to correct said phase imbalance.

4. (Original) The complex multiplier as in claim 1 further comprising:

gain compensation logic to detect a gain imbalance in said signal and to modify one or more of said coefficients to correct said gain imbalance.

5. (Currently amended) ~~The complex multiplier as in claim 1~~ A complex multiplier for adjusting phase and/or gain imbalances in a signal comprising:

a first set of multiplication units to multiply an in-phase ("I") component of said signal by a first set of coefficients; and

a second set of multiplication units to multiply a quadrature ("Q") component of said signal by a second set of coefficients,

wherein each of said coefficients in said first set and said second set are independently modifiable and wherein said I and Q components are transmitted from an output of a fast-Fourier transform ("FFT") module.

6. (Original) The complex multiplier as in claim 5 further comprising:

one or more adders for summing the products of said coefficients and said I and Q components.

7. (Original) The complex multiplier as in claim 6 wherein said products are transmitted to an inverse FFT module.

8. (Currently amended) A method for adjusting amplitude and/or phase imbalances in a digital complex signal comprising:

~~independently adjusting amplitude and/or phase in a complex signal by~~ providing one or more ~~additional,~~ independently-adjustable coefficients ~~to multiply~~; and modifying the components I and Q of the complex signal by multiplying each of them with said ~~amplitude and/or phase values~~ independently-adjustable coefficients associated with said signal.

9. (Canceled)

10. (Original) The method as in claim 8 wherein said coefficients are frequency coefficients and said multiplication is performed after a fast-Fourier transform ("FFT") is performed on said signal.

11. (Original) The method as in claim 8 further comprising: adding products of each of said multiplications to produce a sum of said products.

12. (Original) The method as in claim 11 further comprising: performing an inverse FFT on said sum of said products.

13. (Canceled)

14. (Canceled)

15. (Currently amended) A ~~machine-readable medium having code stored thereon which defines an integrated circuit (IC), said IC~~ A complex multiplier comprising:

~~a first set of multiplication units to multiply~~ means for multiplying an in-phase ("I") component of said signal by a first set of coefficients;

~~a second set of multiplication units to multiply~~ means for multiplying a quadrature ("Q") component of said signal by a second set of coefficients; and

wherein each of said coefficients in said first set and said second set are independently modifiable ~~relative~~ and further comprising at least two adder means, each adder means for summing an output of the first multiplier means together with an output of the second multiplier means to produce a signal output that is a linear function of both the I and Q components.

16. (Currently amended) The ~~machine-readable medium~~ complex multiplier as in claim 15 further comprising: one or more adders for summing products of said coefficients and said I and Q components.

17. (Currently amended) The ~~machine-readable medium~~ complex multiplier as in claim 15 ~~wherein said IC further comprises~~ including: phase compensation logic to detect a phase imbalance in said signal and to modify one or more of said coefficients to correct said phase imbalance.

18. (Currently amended) The ~~machine-readable medium~~ complex multiplier as in claim 15 ~~wherein said IC further comprises~~ including:

gain compensation logic to detect a gain imbalance in said signal and to modify one or more of said coefficients to correct said gain imbalance.

19. (Currently amended) The ~~machine-readable medium~~ complex multiplier as in claim 15 wherein said I and Q components are transmitted from an output of a fast-Fourier transform ("FFT") module.

20. (Currently amended) The ~~machine-readable medium~~ complex multiplier as in claim 19 ~~wherein said IC further comprises~~ including:

one or more adders for summing the products of said coefficients and said I and Q components.

21. (Currently amended) The ~~machine-readable medium~~ complex multiplier as in claim 20 wherein said products are transmitted to an inverse FFT module.

22. (Currently amended) A computer-implemented demodulator method comprising:

performing a fast-Fourier transform ("FFT") on a complex signal to produce complex frequency components of said signal;

multiplying said complex frequency components with a series of frequency coefficients to ~~independently control gain~~ adjust amplitude and/or phase imbalance as between the components of said complex signal; and

performing an inverse fast-Fourier transform ("IFFT') to convert said complex signal into the time domain.

23. (Original) The method as in claim 22 wherein said complex signal is comprised of in-phase ("I") and quadrature ("Q") components.

24. (Original) The method as in claim 22 wherein, to decimate said complex signal, only M out of N frequency components are multiplied by said coefficients, wherein M < N.

25. (Original) The method as in claim 22 further comprising:

detecting a phase imbalance in said complex signal and modifying one or more of said frequency coefficients to correct said phase imbalance.

26. (Original) The method as in claim 22 further comprising:

detecting a gain imbalance in said signal and modifying one or more of said frequency coefficients to correct said gain imbalance.